
Final

Area of Concern G-1 Record of Decision

**Former McClellan Air Force Base
Air Force Real Property Agency**

McClellan, California

January 2010

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Acronyms and Abbreviations

AFB	Air Force Base
AFRPA	Air Force Real Property Agency
AOC	Area of Concern
ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
Cal/EPA	California Environmental Protection Agency
Central Valley Water Board	California Regional Water Quality Control Board, Central Valley Region
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
COC	contaminant of concern
COPC	constituent of potential concern
DTSC	Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
FOST	Finding of Suitability to Transfer
FOSET	Finding of Suitability for Early Transfer
FS	feasibility study
HI	hazard index
IP #3	Initial Parcel #3
IRP	Installation Restoration Program
LRA	Local Reuse Authority
McClellan	former McClellan Air Force Base
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NPL	National Priorities List
OU	operable unit
PAH	polycyclic aromatic hydrocarbons

PCB	polychlorinated biphenyl
RAB	Restoration Advisory Board
RAO	remedial action objective
ROD	record of decision
SARA	Superfund Amendments and Reauthorization Act of 1986
SLUC	State Land Use Covenant
SVOC	semivolatile organic compound
TPH	total petroleum hydrocarbons
VOC	volatile organic compound

SECTION 1

Declaration

1.1 Site Name and Location

This Record of Decision (ROD) is for Area of Concern (AOC) G-1, located at the former McClellan Air Force Base (McClellan) in Sacramento, California (see Figure 1).

Department of the Air Force
Air Force Real Property Agency/ Western REC
3411 Olson Street
McClellan Park, California 95652-1003
CERCLIS Identification Number: CA4570024337

The Air Force and state and federal regulatory agencies work as a team to investigate and clean up McClellan. The Air Force is the lead agency for environmental cleanup activities at McClellan. The primary regulatory agencies overseeing the McClellan cleanup are the U.S. Environmental Protection Agency (EPA) and the State of California Environmental Protection Agency (Cal/EPA), represented by the Department of Toxic Substances Control (DTSC) and the Central Valley Regional Water Quality Control Board (Central Valley Water Board) (collectively, the "State"). The Air Force and the EPA jointly select the remedies, with concurrence from the State.

1.2 Statement of Basis and Purpose

This ROD documents the selected cleanup alternative for AOC G-1 and addresses public comments to the Proposed Plan. The Air Force issued a Proposed Plan as part of its public responsibility under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 117 Section 300.430 (f)(2) and the National Oil and Hazardous Substance Pollution Contingency Plan (NCP). Section 117 of CERCLA requires public involvement in decisions related to the cleanup and closure of the site. The Proposed Plan and subsequent ROD address the community involvement requirements of CERCLA.

This ROD addresses volatile organic compounds (VOCs) in shallow soil gas for the vapor inhalation pathway and non-VOCs in soil that may present a threat to human health through direct contact, inhalation, or ingestion, or to surface water or groundwater quality. The remedies in this ROD do not address VOC and non-VOC contamination in groundwater that may be present at this site, or the potential threat to surface water or groundwater from VOCs. Impacts to surface water are not expected for VOCs because of their inherent volatility. VOC contamination in groundwater and in the vadose zone that threatens groundwater is addressed under the Basewide VOC Groundwater ROD (VOC ROD) completed in 2007 (Air Force Real Property Agency [AFRPA], 2007). Non-VOCs that may be present in groundwater at AOC G-1 were addressed in the Non-VOC Groundwater ROD Amendment (AFRPA, 2009a).

VOCs include many chlorinated solvents and petroleum-related compounds. Non-VOCs include semivolatile organic compounds (SVOCs), metals, and total petroleum hydrocarbons (TPH). As defined for this ROD, SVOCs consist of polycyclic aromatic hydrocarbons (PAHs). TPH contamination at AOC G-1 is commingled with other contaminants regulated under CERCLA; therefore, the TPH contamination is addressed in this ROD. Radiological compounds are not present above background at AOC G-1 and are, therefore, not included within the scope of this ROD.

The Air Force, which is the lead agency, and the EPA selected the remedial action for AOC G-1 in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) 42 United States Code, Section 9601 et seq., and the NCP, 40 Code of Federal Regulations (CFR) Part 300. This decision is based on the Administrative Record file for this site. The Administrative Record contains the documents used in the selection of the remedial actions and is available for review at the AFRPA office (located at 3411 Olson Street, McClellan Park, California). The State concurs with the selected remedy.

1.3 Assessment of the Site

AOC G-1 is an area of concern because of a disposal area located in the southern portion of the site (see Figure 1). Contaminants in soil and soil gas at AOC G-1 are believed to be associated with debris and waste materials buried in the southern disposal area.

Contaminants, including non-VOCs, were detected at concentrations exceeding screening levels in samples collected from within the debris layer located between about 1 and 5 feet below ground surface (bgs). Naphthalene was the only VOC detected at concentrations greater than screening levels in shallow soil gas samples collected at the site. No potential impacts to groundwater or surface water quality were identified at the site.

As a result of past disposal at AOC G-1, releases of hazardous substances have contaminated soil and soil gas. Actual or potential releases of hazardous substances from AOC G-1 present a potential threat to public health and welfare, or the environment, if not addressed by implementing the response actions selected in this ROD.

1.4 Description of Selected Cleanup Alternative

The selected cleanup alternative presented in this ROD is Institutional Controls to prohibit sensitive uses and restrict certain excavation activities. Institutional Controls will be implemented via deed restrictions to limit exposure to people by prohibiting certain uses and activities in the vicinity of the southern disposal area (see Figure 1) thereby reducing exposure to any remaining contaminants. The proposed restrictions would prohibit sensitive uses such as residences, daycare centers, healthcare centers, or schools in the portion of the property where the southern disposal area is located, but would permit recreational use. There would also be a restriction on digging in this specific area. This digging restriction would require that agency approval be obtained before any intrusive work was performed other than routine activities such as irrigation maintenance and landscaping. The Air Force believes the selected remedy for AOC G-1 is protective of

human health and the environment given the current and reasonably anticipated future land use at AOC G-1 (i.e., recreational) and that the proposed institutional control measures are necessary to protect public health and the environment from the residual contaminants at the site.

The Air Force will incorporate the institutional controls in the deed at the time of property transfer. The signed deed will include the specific land use restrictions, and the transfer documents will stipulate that a State Land Use Covenant (SLUC) be executed and recorded within 10 days of transfer.

In addition to the selected remedy and in accordance with CERCLA, at a minimum, five-year reviews will be performed to ensure the remedy is functioning as intended and is protective of human health and the environment.

1.5 Statutory Determinations

The selected cleanup alternative will result in hazardous substances, pollutants, or contaminants remaining onsite above levels that allow for unlimited use and unrestricted exposure. Therefore, five-year reviews will continue to be required for the selected cleanup alternative. In the event the selected cleanup alternative cannot achieve the ROD remedial action objectives (RAOs), additional modifications or changes to the selected remedy may be required.

The Air Force has selected a cleanup alternative for AOC G-1 that is protective of human health and the environment, complies with federal and state applicable or relevant and appropriate requirements (ARARs) for the remedial action, is cost effective, and utilizes permanent solutions to the maximum extent possible. Although there is a statutory preference for treatment of source materials constituting principle threats for remedial actions, treatment of waste at AOC G-1 is not required because no discrete source materials constituting principal threats that would be treatable are present at the site.

1.6 Data Certification Checklist

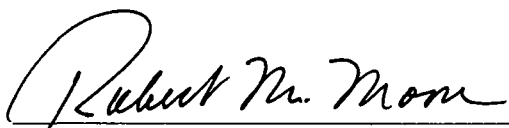
The following information is included in Section 2 of this ROD (additional information can be found in the Administrative Record):

- Current and reasonably anticipated future land use assumptions (Section 2.2)
- Chemicals of concern and respective concentrations and associated risks (Section 2.3 and Table 1)
- Key factor(s) that led to selecting the remedy (Section 2.9)
- Estimated annual and present worth costs, discount rate, and number of years over which the remedy cost estimate are projected (Section 2.11.6)

This document was prepared in accordance with guidance published by the EPA for preparation of RODs (EPA, 1999).

1.7 Authorizing Signatures

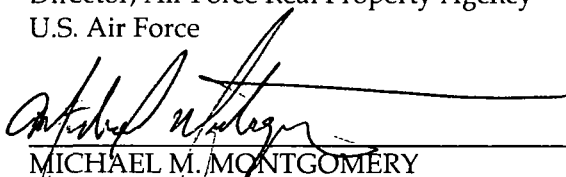
This is the signature sheet for the AOC G-1 ROD. The Air Force and EPA jointly selected the remedies described in this ROD. The State had an opportunity to review and comment on the AOC G-1 ROD, and State concerns have been addressed.



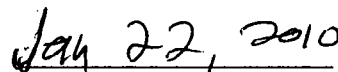
ROBERT M. MOORE
Director, Air Force Real Property Agency
U.S. Air Force



Date



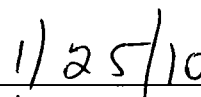
MICHAEL M. MONTGOMERY
Assistant Director, Federal Facilities and Site Cleanup Branch
Region 9, U.S. Environmental Protection Agency



Date



CHARLES RIDENOUR
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Sacramento Office Brownfields and
Environmental Restoration Program
Department of Toxic Substance Control
California Environmental Protection Agency



Date

Decision Summary

2.1 Site Name and Location

McClellan, which encompasses about 3,000 acres, is located 7 miles northeast of downtown Sacramento, California (CERCLIS Identification Number CA 4570024337). McClellan is surrounded by the City of Sacramento to the west and southwest, unincorporated areas of Antelope on the north, Rio Linda on the northwest, and North Highlands on the east (see Figure 1).

AOC G-1 is in the northeastern portion of the Base and is within the Community Support sub-district of the proposed East McClellan District. Perin Avenue and the proposed Core Aviation/Industrial District border the site on the west. Freedom Park Drive borders the site on the north, and the Wherry Park sub-district borders the site on the south.

2.2 Site History and Background

2.2.1 Site History

Founded in 1936, McClellan AFB was an aircraft repair depot and supply base. McClellan's mission was to provide logistics and maintenance support for aircraft, communications, and electronic systems. In 1995, the federal government decided to close McClellan, and it was officially closed in July 2001.

AOC G-1 originally consisted of an approximately 37-acre parcel that was acquired by the Air Force in 1967 (Figure 1). In 2006, the eastern portion of AOC G-1 (comprising approximately 12 acres) was determined to be suitable for unrestricted release, and it was transferred to the Local Reuse Authority (LRA) via a Finding of Suitability to Transfer (FOST) (Tetra Tech, 2006). Therefore, the eastern portion is no longer considered part of AOC G-1.

AOC G-1 currently consists of approximately 25 acres. The site is currently occupied by a recreational complex that includes softball fields and an aviation museum. AOC G-1 was identified as an area of concern because two suspected disposal areas (a southern disposal area and a northern disposal area) and a suspected small arms firing range were identified in aerial photographs.

One of the suspected disposal areas (the southern disposal area) appears to have been associated with a former automotive business that occupied part of the site prior to the Air Force's acquisition of the property. This disposal area apparently received wastes such as construction debris, including concrete, asphalt, tar paper, bricks, glass, burnt wood, ash, metal scraps, and cables mixed with soil used to fill low areas. The second suspected disposal area (the northern disposal area, which is seen as an area of soil disturbance on aerial photographs) is no longer believed to have been an actual disposal area. The northern

disposal area appears on aerial photographs at the same time as the construction of the recreation complex. Therefore, this feature is believed to have been a storage area for the fill material and topsoil used for the construction of the softball fields. Based on detailed aerial photograph reviews and interviews with persons knowledgeable with the site, the suspected small arms firing range has been subsequently identified as an archery range.

2.2.2 Previous Investigations

Several field investigations were performed to evaluate the potential sources of contamination at AOC G-1. The data from these investigations are summarized in Table 1. In addition, a summary of previous investigations and collected data can be found in greater detail in the *Initial Parcel #3 Feasibility Study* (IP #3 FS) (CH2M HILL, 2008).

The potential release mechanism for AOC G-1 is the release of hazardous substances from wastes in the southern disposal area. Constituents of potential concern (COPCs) for AOC G-1 consisted of metals, herbicides, polychlorinated biphenyls (PCBs), pesticides, SVOCs, TPH, and VOCs as documented in the IP #3 FS.

Contaminants at AOC G-1 are believed to be associated with debris and waste materials buried in the southern disposal area. During exploratory trenching in the southern disposal area, construction debris and other wastes were encountered between 1 and 5 feet bgs. Non-VOC contaminants such as metals (arsenic, vanadium), TPH, and PAHs were detected at concentrations exceeding screening levels in samples collected from within the debris layer. Naphthalene, which is also a PAH, was the only VOC detected at concentrations greater than screening levels in shallow soil gas samples collected at the site. Methane was detected at a low concentration in only one of seven samples collected from AOC G-1 and analyzed for methane. The methane detected in this one sample was attributed to decomposition of natural organic material associated with a marshy area onsite. Therefore, methane gas generation is not considered to be an issue for AOC G-1. No potential impacts to groundwater or surface water quality were identified at the site.

2.2.3 Enforcement Activities

On October 15, 1984, the EPA proposed listing McClellan as a candidate site for inclusion on the National Priorities List (NPL). McClellan was formally placed on the NPL on July 22, 1987. In 1989, the Air Force, EPA Region 9, and the California Department of Health Services signed an Interagency Agreement for the cleanup. The Interagency Agreement was implemented in 1990.

2.3 Summary of Site Risks

The following chemicals were detected at AOC G-1 at concentrations above screening levels and background: arsenic, vanadium, benzo(a)anthracene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, naphthalene, and TPH. Based on the screening levels, arsenic and TPH pose a potential risk to groundwater and surface water, while the arsenic, vanadium, and the PAHs pose a potential risk to human health.

As previously indicated, contaminants at AOC G-1 are believed to be associated with debris and waste materials buried in the southern disposal area. The waste materials are currently covered by clean soil, so there is no existing potential for human exposure or impacts to surface water. The maximum concentration of TPH does not exceed preliminary cleanup goals and detections of arsenic were sporadic and isolated, so no potential impacts to groundwater are expected. However, the potential exists for human exposure (through direct contact, ingestion, and/or inhalation) if the waste is exposed during excavation in the southern disposal area. The Air Force analyzed various human health risk scenarios at AOC G-1 to evaluate impacts resulting from current and future land use, which are summarized in Table 2.

Risks greater than the target risk range (1-in-1,000,000 to 100-in-1,000,000 for added cancer risks and/or hazard index [HI] greater than 1) are unacceptable, and require action. For risks that fall within the target risk range, a risk management decision is made and considers information including potential land use and the nature of the contamination. No actions are required for excess cancer risk values less than 1-in-1,000,000, or an HI value less than 1.

For a hypothetical resident exposed to soil from the top 2 feet, the carcinogenic risks are 0.05-in-1,000,000 (which is less than the risk range) and the noncancer HI is less than 1 for both adults (0.2) and children (0.9). This scenario also conservatively estimates risk for recreational use and shows that those risks are very low (less than the risk range). Risks for the hypothetical resident exposed to deeper soil are higher (30-in-1,000,000) because the contaminants were detected below 2 feet. The carcinogenic risk for this scenario is within the risk range, and the noncancer HI is less than 1 for adults (0.4), but greater than 1 for children (2; the risk is associated with the metal vanadium). For an outdoor worker, the carcinogenic risks are 0.006-in-1,000,000 (which is less than the risk range), and the noncancer HI is less than 1 (0.04). The indoor air residential cancer risks are 1-in-1,000,000, and the noncancer HI is 0.2. The indoor air occupational worker risks are 0.08-in-1,000,000, and the noncancer HI is 0.02.

Risks to wildlife are considered to be insignificant because the developed nature of the site (sports fields and a museum) provides little habitat and because no sensitive wildlife is present onsite.

2.4 Scope and Role of AOC G-1 or Response Actions

For environmental management purposes, McClellan has subdivided the Base into the following 11 Operable Units (OUs): A, B, B1, C, C1, D, E, F, G, H, and Groundwater, which encompasses the entire Base.

Because of the complexity of different types of contaminants commingling at McClellan, the presence of contamination in the soil, sediment, and groundwater; and the large extent of contamination across the Base; the investigation and remediation of contamination at the Base under the Installation Restoration Program (IRP) are subdivided into several programs. This subdivision allows for more efficient planning and implementation of each project.

This discussion of the interaction of remedial programs is focused on those that relate to this ROD for non-VOC and VOC contaminants.

This ROD addresses VOCs in shallow soil gas and non-VOCs in soil at AOC G-1, which is located within OU G. VOC contamination in the vadose zone that threatens groundwater and VOC contamination in groundwater at AOC G-1 is addressed under the VOC ROD that was completed in 2007 (AFRPA, 2007). Non-VOCs that may be present in groundwater at AOC G-1 are addressed in the Non-VOC Groundwater ROD Amendment (AFRPA, 2009a). Under the VOC ROD, there are deed restrictions that protect the integrity of the groundwater monitoring wells at AOC G-1 and provide for access to the wells. The VOC ROD also establishes a consultation zone for groundwater; AOC G-1 falls within this zone.

The Air Force plans to transfer the property described within the AOC G-1 ROD to other parties. The bulk of the property addressed by this ROD has been designated as Parcel M. The suitability to transfer this land and the land transfer process will be addressed in the Parcel M FOST. The area of AOC G-1 that is not part of Parcel M will be transferred at a later date in connection with the transfer of parcels covered by a Finding of Suitability for Early Transfer (FOSET). Two types of transfer are currently anticipated for Parcel M. The recreational complex will be transferred by means of a public benefit conveyance through the National Park Service who then will transfer the land to the North Highlands Recreation and Park District. The Air Force will ensure, through the property transfer process, that the deed for this property will include the institutional controls selected in this ROD. The land occupied by the museum will be transferred from the Air Force to Sacramento County and then to the museum as part of an economic development conveyance. The museum parcel does not require any restrictions.

2.5 Community Participation

McClellan has had an active community relations/public participation program since the beginning of restoration activities in the early 1980s. The purpose of the program is to help community members understand McClellan's cleanup program and learn how to become involved in the cleanup decision making process.

Highlights of the community relations activities undertaken by McClellan are as follows:

- **Restoration Advisory Board (RAB).** In 1995, a RAB was formed to increase communication between the Air Force and the neighboring community. Through open communication and the exchange of ideas, interests, and concerns, the RAB supports the search for safe, timely, and effective cleanup solutions so that McClellan may be transferred from Air Force ownership to public/private ownership. The RAB meetings are held quarterly. These public meetings include discussions of the RAB's advice on particular issues, information on cleanup actions or public interest items, and updates on the status of the cleanup program. The Air Force provides seminars to RAB members to aid in their review of documents and cleanup actions. In addition, the Technical Assistance for Public Participation program is available to provide funds to retain an independent contractor to assist the community members in their reviews.

- **Administrative Record.** McClellan established the Administrative Record at the beginning of its environmental investigation to store all information that supports cleanup decisions at McClellan. An Information Repository was set up to make all of the information, reports, and reference materials available for public review. More than 15 years of documentation is available for review by the public. The location of this repository is within the AFRPA office, 3411 Olson Street, McClellan, California 95652. Documents related to the cleanup efforts at McClellan also are available for review at DTSC, Central Valley Water Board, and EPA Region 9 offices.
- **Community Relations Plan.** The first McClellan Community Relations Plan was approved in August 1985. The Community Relations Plan was updated and revised in 1988, 1991, 1993, 1996, 1999, 2002, and 2009.
- **Mailing List.** A mailing list of all interested parties in the community is maintained by the Air Force and updated regularly. In 2002, blanket mailings to all residents in the vicinity of McClellan were conducted in an effort to add new/interested parties to the mailing list. Since then, the mailing list has been updated repeatedly.
- **Newsletters.** Since May 1984, McClellan's quarterly newsletter, the *Environmental Action Update*, has been distributed to interested individuals and organizations. The newsletter includes articles on the status of the IRP, meeting announcements, listings of recently issued documents, and names of individuals to contact for more information. The newsletter is mailed to more than 2,500 neighbors of the Base, community leaders, businesses, environmental organizations, civic clubs, and the news media.
- **Website.** The Air Force has established a Web site to support communication about its environmental program (<http://www.safie.hq.af.mil/afropa/index.asp>). The following information is available on the Web site:
 - A search feature identifying the documents stored in the Administrative Record
 - Announcements for upcoming public meetings and RAB meetings
 - RAB information and meeting minutes
 - Copies of newsletters and fact sheets
- **Fact Sheets.** Since May 1990, the Air Force publishes fact sheets to help explain specific topics. Topics have included descriptions of new cleanup technologies, cleanup milestones, and descriptions of removal action plans. Fact sheets are also provided to increase the community's knowledge of technologies or the science of cleanup at McClellan.
- **Public Comment Periods/Public Meetings.** Public comment periods give the community an opportunity to review documents and provide comments verbally or in writing. Public meetings are held to solicit public comment on documents or actions and to address areas of public concern or interest. The final Proposed Plan (AFRPA, 2009b) and a summary Proposed Plan Fact Sheet for AOC G-1 were issued on June 5, 2009, and an associated public comment period was held from June 8 through July 8, 2009, to provide the community an opportunity to comment on the proposed action and anticipated future land use at this site. A public meeting was also held on June 16, 2009,

to solicit public input on the proposed action at AOC G-1 and anticipated future land use at this site, and to provide the community an additional opportunity to provide comments. The Air Force prepared a written response to the single public comment pertaining to the Proposed Plan. The response to the public comment is included in the Responsiveness Summary section of this ROD for AOC G-1. This ROD will be available in the Administrative Record upon publication. The public participation requirements of CERCLA and the NCP were met for the remedy selection process.

2.6 Principal Threat Wastes

The NCP establishes an expectation that the EPA will use treatment to address the principal threats posed by a site wherever practicable. Principal threats consist of materials that are highly mobile or toxic, cannot be reliably controlled in place, or present a significant risk to human health or the environment. Contaminants in soil and soil gas at AOC G-1 have been determined through risk assessments to pose a threat to human health. However, treatment of waste at AOC G-1 is not required because no discrete source materials constituting principal threats that would be treatable are present at the site.

2.7 Remedial Action Objectives

Contaminants identified at AOC G-1 at concentrations above screening levels and background consist of two metals (arsenic and vanadium); several PAHs, consisting of benzo(a)anthracene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene; and TPH. RAOs serve as goals established for protecting human health and the environment at sites where the Air Force proposes an action. The RAO is to reduce risks to human health to acceptable levels for the current and reasonably anticipated future land use. When an action is needed, the goal is to reduce the excess cancer risk to 1-in-1,000,000 and the noncancer HI to 1 or less. Action is necessary to prevent exposure to the debris that will remain in the southern disposal area.

RAOs for water quality or ecological receptors are not needed for AOC G-1. No potential impacts to groundwater or surface water quality are expected. The site is fully developed, and there is no significant ecological habitat onsite; therefore, there are no potential impacts to ecological receptors.

2.8 Description of Alternatives

The Air Force evaluated clean-up alternatives to address VOC and Non-VOC contamination at AOC G-1 in the IP #3 FS (CH2M Hill 2008). The remedial alternatives presented in the IP #3 FS were intended to address a broad range of site conditions and contaminant types. Because both VOCs and non-VOCs that are present vary by site, alternatives were developed to address both of these types of contaminants. The alternatives for AOC G-1 are described in detail in the IP #3 FS and are summarized below.

2.8.1 Alternative 1 – No Action

CERCLA and the NCP require a No Action alternative to establish a basis for comparison with other alternatives. No remedial activities for VOCs and/or non-VOCs are implemented under this alternative. No cost is associated with this alternative.

2.8.2 Alternatives VOC2 and Non-VOC2 – Institutional Controls to Prohibit Residential Use (Restricted Land Use)

Under these alternatives, institutional controls will be implemented to limit exposure to people by prohibiting certain uses in the vicinity of the southern disposal area (see Figure 1). Institutional controls are designed to address specific site conditions and may include permitting, zoning, and/or deed restrictions that limit use to reduce exposure to any remaining contaminants. The proposed restrictions would prohibit sensitive uses such as residences, daycare centers, healthcare centers, or schools in the portion of the property where the southern disposal area is located, but would permit recreational use. There would also be a restriction on digging in this specific area. This restriction would require that agency approval be obtained before any intrusive work was performed other than routine activities such as irrigation maintenance and landscaping. The Air Force, Sacramento County, EPA, and the State each carry out specific institutional controls. In addition to the institutional controls described here, there are also restrictions on the property associated with the VOC ROD as described in Section 2.4.

The Air Force will ensure that the selected institutional controls are incorporated into the deed. The signed deed will include the specific land use restrictions, and the transfer documents will stipulate that a SLUC be executed and recorded within 10 days of transfer. Prior to conveyance of the property, EPA and DTSC representatives will be given reasonable opportunity to review and comment on the applicable deed language and associated rights of entry for purposes of institutional control oversight and enforcement.

Implementation of Institutional Controls

The institutional control alternative includes enforceable use restrictions in the form of institutional controls on the use of certain properties. Specific language is included in this ROD describing the responsibility of the Air Force for implementing, monitoring, reporting on, and enforcing the institutional controls. Although the Air Force is transferring procedural responsibilities to the transferee and its successors by provisions to be included in the deed(s) transferring title to the property and may contractually arrange for third parties to perform any and all of the actions associated with the institutional controls, the Air Force is ultimately responsible for the remedy. The Air Force will exercise this responsibility in accordance with CERCLA and the NCP. Therefore, compliance with the terms of this ROD will be protective of human health and the environment. Because the restrictions are specifically described below and the means for implementing the restrictions are detailed herein, it is not necessary for the Air Force to submit any new post-ROD, institutional control implementation documents, such as a Land Use Control Implementation Plan, new operation and maintenance plans, or remedial action work plan.

Meeting the RAOs will be the primary and fundamental indicator of institutional control performance, the ultimate aim of which is to protect human health and the environment. Performance measures for the institutional controls are the RAOs plus the actions necessary to achieve those objectives. It is anticipated that successful implementation, operation, maintenance, and completion of these measures will achieve protection of human health and the environment and compliance with all legal requirements.

The Air Force may contractually arrange for third parties to perform any and all of the actions associated with the institutional controls, although the Air Force is ultimately responsible under CERCLA for the successful implementation of institutional controls, including monitoring, maintenance, and review of the institutional controls. Maintenance, monitoring, and other controls as established in accordance with the ROD and the appropriate transfer documents will be continued until the institutional controls are no longer necessary. Institutional controls will be maintained until the concentration of hazardous substances in the soil and groundwater are at such levels as to allow for unrestricted use and exposure.

The Air Force currently owns the land encompassed by AOC G-1 and is leasing the area to other parties for use as a recreational facility and as a museum. During the time between the adoption of this ROD and deeding of the property, equivalent restrictions will be implemented pursuant to the terms of the existing lease, which requires the approval of the Air Force for any construction or soil disturbance activity. The lease restrictions are in place and operational and will remain in place until the property is transferred by deed. At the time of deed transfer, lease restrictions will be superseded by equivalent use restrictions to be included in the federal deed and the SLUC as described in this ROD.

Deed Restriction and Reservation of Access. The federal deed(s) for any property including AOC G-1 will include a description of the residual contamination on the property, consistent with the Air Force's obligations under CERCLA section 120(h) and the specific restrictions set forth in this Section. The federal deeds may require additional specific restrictions from RODs addressing other residual contamination on the property. Institutional controls, in the form of deed restrictions, are "environmental restrictions" under California Civil Code Section 1471 (Section 1471). The deed(s) will include legal description of the property to which the institutional controls apply and will contain the provisions required by Section 1471 to qualify the institutional controls as "environmental restrictions" so that they run with the land.

The Air Force and regulatory agencies may conduct inspections of the institutional controls and the affected property. The deeds or associated transaction documents will also contain a reservation of access to the property for the Air Force, the EPA, and the State, and their respective officials, agents, employees, contractors, and subcontractors for purposes consistent with the Air Force IRP or the Federal Facilities Agreement. The Air Force will provide such access to regulatory agencies prior to transfer.

The environmental restrictions are the basis for part of the CERCLA 120(h)(3) covenant that the United States is required to include in the deed for any property that has had hazardous substances stored for 1 year or more or known to have been released or disposed of on the property.

For any deed (non-federal entity) or letter of transfer (federal entity) transferring all or part of any parcel including AOC G-1, institutional controls, in the form of land use restrictions, will be incorporated in the deed as a grantee covenant, in substantially the following language:

- Grantee covenants and agrees that it will not use the southern disposal area for residential purposes, hospitals for human care, public or private schools for persons under 18 years of age, or day-care centers for children.
- Other than routine maintenance activities, such as irrigation maintenance (e.g., repairing and/or replacing pipe and associated parts used as part of the irrigation system) and landscaping (e.g., mowing, planting, and reseeding), the Grantee will not undertake or allow any digging, trenching, drilling, excavation, or any other soil disturbing activities within the southern disposal area without prior written permission.

Notice of Institutional Controls. The Air Force will include the specific deed restriction language set forth in this ROD in the deed for AOC G-1, and will provide a copy of the deed(s) containing the use restrictions to the regulatory agencies as soon as practicable after transfer of fee title. The Air Force will inform the property owner(s) of the necessary institutional controls in the draft deed. The signed deed and/or transfer document(s) legally binding between the Air Force and the transferee will include the specific land use restrictions as well as a condition that the transferee execute and record a SLUC, within 10 days of transfer, to address any State obligations pursuant to State law, including 22 CCR, Section 67391.1. Any letter of transfer (to a federal entity) will include a condition that future deeds to a non-federal entity include this requirement. The Air Force will ensure that the transferee has met these conditions. Concurrent with the transfer of fee title from the Air Force to the transferee, the FOST and the location of the Administrative Record file will be communicated in writing to the property owners and to appropriate state and local agencies (with a copy to EPA) with authority regarding any of the activities or entities addressed in the controls to ensure that such agencies can factor the information into their oversight, approval, and decision-making activities regarding the property.

Prior to conveyance of any Air Force property including AOC G-1, EPA and DTSC representatives will be given reasonable opportunity to review and comment on the applicable deed language described in this section and associated rights of entry for purposes of institutional control oversight and enforcement.

The Air Force will provide notice to the EPA and DTSC at least six (6) months prior to any transfer or sale of property so that EPA and DTSC can be involved in discussions to ensure that appropriate provisions are included in the transfer terms or conveyance documents to maintain effective institutional controls. If it is not possible for the facility to notify the EPA and DTSC at least six (6) months prior to any transfer or sale, then the facility will notify the EPA and DTSC as soon as possible but no later than 60 days prior to the transfer or sale of any property subject to institutional controls. Additionally, the Air Force further agrees to provide the EPA and DTSC with similar notice, within the same time frames, as to federal-to-federal transfers of property.

Annual Evaluations/Monitoring. Prior to property transfer, the Air Force will conduct annual monitoring, provide annual reports describing whether property use has conformed to institutional controls or use restrictions, and undertake prompt action to address activity that is inconsistent with the institutional control objectives or use restrictions, or any action that may interfere with the effectiveness of the institutional controls. The monitoring results will be included in a separate report or as a section of another environmental report, if appropriate, and provided to the EPA and DTSC. The annual monitoring reports will be used in preparation of the Five-Year Review to evaluate the effectiveness of the remedy. Prior to transfer, the annual monitoring report submitted to the regulatory agencies by the Air Force will evaluate the status of the institutional controls and how any institutional control deficiencies or inconsistent uses have been addressed.

Upon the effective date of property conveyance, the transferee (or other entity accepting such obligations [which may include, without limitation, subsequent transferees]) or subsequent property owner(s) will conduct annual physical inspections of property including AOC G-1 to confirm continued compliance with all institutional control objectives unless and until the institutional controls at the site are terminated. The transferee or subsequent property owner(s) will provide to the Air Force, the EPA, and DTSC an annual monitoring report on the status of the institutional controls and how any institutional control deficiency or inconsistent uses have been addressed, whether use restrictions and controls were communicated in the deed(s) for any property transferred in the reporting period, and whether use of the property encompassing the area subject to institutional controls has conformed to such restrictions and controls. The Air Force will place these transferee obligations in the deed or other transfer documentation.

If a transferee fails to provide an annual monitoring report as described above to the Air Force, the Air Force will notify the EPA and DTSC as soon as practicable. If the EPA or DTSC does not receive the annual monitoring report from the transferee, it will notify the Air Force as soon as practicable. Within 30 days of the report's due date, the Air Force will take steps to determine whether institutional controls are effective and remain in place and advise the regulators of its efforts. In any event, within 90 days of the report's due date, the Air Force will determine the status of institutional controls and provide its written findings, with supporting evidence sufficient to confirm the reported status, based on the use restrictions/institutional controls and site conditions, to the EPA and DTSC unless either EPA or DTSC, in its sole discretion, acts to confirm the status of the institutional controls independently.

The five-year reviews conducted by the Air Force will also address whether the institutional controls in the ROD were inserted in the deed, if property was transferred during the period covered; whether the owners and State and local agencies were notified of the institutional controls affecting the property, and whether use of the property has conformed to such institutional controls. Five-year reviews will make recommendations on the continuation, modification, or elimination of annual reports and institutional control monitoring frequencies. Five-year reviews are submitted by the Air Force to the regulatory agencies for review and comment.

Although the Air Force is transferring procedural responsibilities to the transferee and its successors by provisions to be included in the deed(s) transferring title to AOC G-1 and may

contractually arrange for third parties to perform any and all of the actions associated with the institutional controls, the Air Force is ultimately responsible for the remedy.

Response to Violations. Prior to property transfer, the Air Force will notify EPA and the DTSC as soon as practicable but no longer than 10 days after discovery of any activity that is inconsistent with the institutional control objectives or use restrictions, or any other action that may interfere with the effectiveness of the institutional controls. The Air Force will notify the EPA and DTSC regarding how the Air Force has addressed or will address the breach within 10 days of sending EPA and DTSC notification of the breach.

The deed will require that post-transfer, the transferee will notify the Air Force, the EPA, and DTSC of any activity that is inconsistent with the institutional control objectives or use restrictions, or any other action that may interfere with the effectiveness of the institutional controls, and will address such activity or condition as soon as practicable, but in no case will the process be initiated later than 10 days after the transferee becomes aware of the breach. Post-transfer, if the transferee fails to satisfy its obligations pursuant to the SLUC, DTSC may enforce such obligations against the transferee. If there is failure of the selected remedy or a violation of selected remedy obligations (for example, an activity inconsistent with institutional control objectives or use restrictions, or any action that may interfere with the effectiveness of the institutional controls), DTSC will notify the Air Force and EPA in writing of such failure as soon as practicable (but no longer than 14 days) upon discovery of the inconsistent activity or action that interferes with the effectiveness of the institutional control, and initially seek corrective action or other recourse from the transferee. If, after diligent efforts, DTSC is unable to enforce the obligations of the SLUC or remedy obligations against the transferee, within 21 days following DTSC's notification, the parties will confer to discuss re-implementation of the selected remedy or other necessary remedial actions to address the breach of the institutional control. Once DTSC reports that the transferee is unwilling or unable to undertake the remedial actions, the Air Force will within 10 days inform the other parties of measures it will take to address the breach.

Approval of Land Use Modification. Prior to transfer, the Air Force will not modify or terminate institutional controls or implementation actions, or modify use restrictions that are part of the selected remedy without approval by EPA and DTSC. The Air Force will seek prior concurrence before any anticipated action that may disrupt the effectiveness of the institutional controls or any action that may alter or negate the need for institutional controls.

Any grantee of property constrained by the institutional controls imposed through their transfer document(s) may request modification or termination of an institutional control. Modification or termination of an institutional control, except the SLUC (discussed below), requires Air Force, EPA, and DTSC approval.

State Land Use Covenant Modification. Any modification or termination of the SLUC must be undertaken in accordance with State law and will be the responsibility of the transferee or then-current owner or operator.

2.8.3 Alternative 4b – Excavation and Offsite Disposal (Unrestricted Land Use)

Under this alternative, all of the soil in the southern disposal area would be excavated and transported offsite for disposal at an appropriate facility. The target volume for this alternative is 30,100 cubic yards, and it consists of removing all of the soil within the southern disposal area (see Figure 1) to a depth of 5 feet bgs. All of the excavated material would be transported offsite for Class II disposal. Following excavation, the area would be backfilled and the surface cover (including the ball fields) would be restored.

Because all of the material within the disposal area would physically be removed from the site, no institutional controls or long-term monitoring would be required. This alternative would facilitate unrestricted use of the site, including residential use, school facilities, and/or daycare centers.

2.9 Comparative Analysis of Alternatives

The Air Force evaluated and compared the alternatives against nine criteria. These nine criteria are part of the CERCLA process established to provide a format for selecting appropriate remedial alternatives. The first two criteria, overall protection of human health and the environment and compliance with state and federal environmental requirements, are called threshold criteria. These two criteria must be met in order for the alternative to be eligible for selection. The remaining seven criteria, called modifying and balancing criteria, are used to compare the eligible alternatives and help in the selection of the Preferred Alternative. The Air Force and the support agencies (i.e., the EPA and State) have reached consensus on the selected remedy. The last criterion, Community Acceptance, was evaluated through the Proposed Plan for AOC G-1 and associated public comments. The Air Force describes community acceptance in the Responsiveness Summary section of this ROD.

The comparative analysis of the alternatives is summarized in Figure 2. All of the alternatives, except the No Action alternative, are protective of human health and the environment, are compliant with ARARs, are effective in both the short-term and long-term, and are implementable. None of the alternatives provides for a reduction of toxicity, mobility, or volume through treatment. The cost to achieve the same risk reduction using Alternative 4b (Excavation and Offsite Disposal) is significantly higher than the cost for Alternative VOC2/ Alternative Non-VOC2 (Institutional Controls to Prohibit Residential Use). Based on input received from the public during the Proposed Plan stage, the community accepts Alternative VOC2/ Alternative Non-VOC2 (Institutional Controls to Prohibit Residential Use) and believes that this alternative provides good use of the property with reasonable cost considerations.

2.10 Selected Remedy

The Air Force's selected alternative for AOC G-1 is Institutional Controls to prohibit residential use and restrict certain digging in the southern disposal area. This cleanup alternative for AOC G-1 was presented in the Proposed Plan and the Air Force believes the

selected alternative for AOC G-1 is protective of human health and the environment given the current and reasonably anticipated future land use at AOC G-1 (i.e., recreational and museum). The proposed institutional control measures are necessary to protect public health and the environment from the residual contaminants at the site. The selected remedy complies with ARARs (i.e., state and federal environmental requirements), is cost effective, and utilizes permanent solutions to the maximum extent possible. The selected remedy is expected to provide the best balance with respect to the modifying and balancing criteria.

In addition to the selected remedy and in accordance with CERCLA, five-year reviews will be performed to ensure the remedy is functioning as intended and is protective of human health and the environment.

2.11 Statutory Determinations

Under CERCLA Section 121 and the NCP, the lead agency must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost effective, and use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element and a bias against offsite disposal of untreated wastes. The following sections discuss how the selected remedy meets these statutory requirements.

2.11.1 Protection of Human Health and the Environment

Protection of human health and the environment would be achieved and maintained by preventing exposure to contaminants through institutional controls. Land use restrictions would limit the potential for sensitive receptors to be exposed to residual contamination, and digging restrictions would prevent intrusion into contaminated materials. Assuming that no breach would occur, exposure pathways would be incomplete, and no human health risk or threat to the environment would be posed.

Under this alternative, contamination will be left in place. Therefore, monitoring and enforcement of the institutional controls will be required to ensure the continued effectiveness of the alternative.

2.11.2 Compliance with Applicable or Relevant and Appropriate Requirements

Section 121(d) of CERCLA states that remedial actions on CERCLA sites must attain (or justify the waiver of) any federal or more stringent state environmental standards, requirements, criteria, or limitations that are determined to be ARARs. Applicable requirements are those cleanup standards, criteria, or limitations promulgated under federal or state law that specifically extend to the situation at a CERCLA site. A requirement is applicable if the jurisdictional prerequisites of the environmental standard show a direct correspondence when objectively compared with the conditions at the site. The selected remedy, Institutional Controls, complies with ARARs for protection of human health. ARARs are presented in Table 3.

2.11.3 Cost Effectiveness

In the Air Force's judgment, the selected remedy for AOC G-1 (Institutional Controls) is cost-effective and represents a reasonable value for the money to be spent. In making this determination, the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness" (NCP 300.430(f)(1)(ii)(D)). This was accomplished by evaluating the "overall effectiveness," of those alternatives that satisfied the threshold criteria (i.e., protective of human health and the environment and ARAR compliant). Overall effectiveness was further evaluated by assessing the balancing criteria (long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; short-term effectiveness; and implementability). Overall effectiveness was then compared to costs to determine cost-effectiveness.

Section 2.11.6 provides cost information for the selected remedy for AOC G-1. In addition, Figure 2 summarizes the costs and provides the information needed to evaluate the cost effectiveness of the selected remedy. For each alternative, information is presented on the threshold and balancing criteria.

2.11.4 Use of Permanent Solutions and Preference for Treatment as a Principal Element

The Institutional Control remedy for AOC G-1 is neither permanent (if the institutional controls fail) nor does it satisfy the preference for treatment. However, the Air Force and EPA have determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at AOC G-1. The selected remedy for AOC G-1 provides the best balance of trade-offs in terms of the five balancing criteria, while also considering the statutory preference for treatment as a principal element and bias against offsite treatment and disposal, and considering State and community acceptance. Overall, contaminant concentrations at AOC G-1 are relatively low and the contaminated soil and soil gas at this site do not constitute principal threat wastes as discussed in Section 2.3.

2.11.5 Five-year Review Requirements

At a minimum, a five-year review will be required for AOC G-1 because the selected remedy for this site will result in hazardous substances, pollutants, or contaminants remaining onsite above levels that allow for unlimited use and unrestricted exposure.

2.11.6 Cost

The annual costs for the Institutional Control remedy at AOC G-1 would be \$4,000. The annual institutional control costs include State and EPA oversight and implementation of the SLUC. The total cost and present-worth cost for 30 years are \$121,000 and \$81,000, respectively.

The cost estimate is based on the best available information regarding the anticipated scope of the remedial alternative. A detailed cost analysis for the selected remedy is presented in the Initial Parcel #3 FS, Appendix D. Costs were estimated in accordance with EPA guidelines (*A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*,

OSWER 9355.0-75, July 2000). Per the guidelines, the discount rate used for the calculations was 3.0 percent and was taken from Appendix C of the Office of Management and Budget Circular A-94 (January 2007) for real discount rates over a 30-year period.

2.12 Works Cited

Air Force Real Property Agency (AFRPA). 2009a. *Non-VOC Amendment to the Basewide VOC Groundwater Record of Decision*. Prepared for the former McClellan Air Force Base, California. Draft Final. June.

Air Force Real Property Agency (AFRPA). 2009b. *Proposed Plan for Area of Concern G-1*. Prepared for the former McClellan Air Force Base. Final. May.

Air Force Real Property Agency (AFRPA). 2007. *Basewide VOC Groundwater Record of Decision*. Prepared for the former McClellan Air Force Base, California. Final. June.

CH2M HILL. 2008. *Initial Parcel #3 Feasibility Study*. Prepared for the former McClellan Air Force Base, California. Final. December.

Radian Corporation (Radian). 1997. *Interim Basewide Remedial Investigation Report, Part 1 – General Framework*. Final. June.

Tetra Tech. 2006. *Area of Concern G-1 Findings of Suitability to Transfer*.

U.S. Environmental Protection Agency (EPA). 1999. *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*. EPA 540-R-98-031. OSWER 9200.1-23P. July.

Responsiveness Summary

3.1 Background of Community Involvement

The Proposed Plan for AOC G-1 was available for review during a 30-day public comment period from June 8 through July 8, 2009. A public notice announced the start of the public comment period. The Proposed Plan was provided to key stakeholder groups including the regulatory agencies and RAB members. The Proposed Plan was also placed at the North Highlands Library. A Fact Sheet that summarized the information in the Proposed Plan was also distributed to individuals on the McClellan mailing list. In addition, a public meeting was held on June 16, 2009, to explain the Proposed Plan and solicit comments from the public. The public was encouraged to review the documents and provide comments about the cleanup alternatives presented in the Proposed Plan orally at the public meeting, in writing, or via e-mail. The Proposed Plan and public comment period are key parts of the decision-making process because the Air Force uses community input when making cleanup decisions.

3.2 Summary of Comments Received

The Air Force received one written comment from a member of the public during the public comment period. This comment and the Air Force response are provided below. The public comment did not result in modification of the recommended cleanup alternatives presented in the Proposed Plan.

Comment submitted in writing to AFRPA during the comment period:

Aerospace Museum of California, James W. Hopp, Board President: We have reviewed the Proposed Plan for Area of Concern G-1 that includes the Aerospace Museum of California's 6.5 acres. We support the Preferred Alternative, Institutional Controls to Prohibit Residential Use, as recommended by the Air Force and regulatory agencies as the most protective of human health and the environment. This alternative provides good use of the property with reasonable cost considerations.

Air Force Response: Thank you.

Tables

TABLE 1

Summary of Data from Previous Investigations

Area of Concern G-1 Record of Decision, Former McClellan Air Force Base, Sacramento, California

					AFRPA Screening Levels ^a			
Analyte	Units	Maximum Concentration			Protection of Surface Water	Protection of Groundwater	Protection of Human Health	
		0-1 feet bgs	1-15 feet bgs	15+ feet bgs			Unrestricted Use	Industrial Use
Metals^{b,c}								
Aluminum	mg/kg	ND	ND	30,500	2.8E+03	8.4E+04	3.5E+04	9.1E+05
Arsenic	mg/kg	5.6 J	14.2 J	6.7 J	5.8E-01	3.3E+00	1.5E-02	2.3E-01
Barium	mg/kg	ND	582	ND	3.2E+03	7.8E+03	6.9E+03	1.8E+05
Beryllium	mg/kg	ND	0.71 J	0.804	1.3E+02	3.6E+02	6.9E+01	1.8E+03
Cadmium	mg/kg	0.535 ^d	0.76 J	1.2 J	2.2E+00	9.6E+01	6.2E+00	1.0E+03
Calcium	mg/kg	7,990	8,290	ND	—	—	—	—
Chromium, total	mg/kg	55.1	98.1 J	ND	1.6E+03	8.1E+04	2.1E+02	4.5E+02
Cobalt	mg/kg	ND	20	17	1.6E+03	4.7E+04	6.9E+02	1.8E+04
Copper	mg/kg	ND	ND	48.5	1.3E+02	2.5E+05	1.4E+03	3.7E+04
Nickel	mg/kg	58.6	ND	ND	7.7E+02	5.8E+03	4.3E+02	1.8E+04
Potassium	mg/kg	ND	ND	4,680	—	—	—	—
Selenium	mg/kg	ND	3.4 J	2.5 J	1.6E+02	5.8E+03	1.1E+02	4.6E+03
Silver	mg/kg	1.58	ND	ND	2.3E+01	3.5E+03	1.7E+02	4.6E+03
Sodium	mg/kg	ND	1,360	1,550	—	—	—	—
Thallium	mg/kg	0.815 ^e	0.848 ^e	1.06 J ^e	5.4E+01	1.4E+01	2.3E+00	6.1E+01
Vanadium	mg/kg	ND	82.3	ND	1.6E+03	1.3E+04	3.5E+01	9.2E+02
Radionuclides								
Americium 241	pCi/g	0.1 J	ND	ND	—	—	—	—
Bismuth 212	pCi/g	ND	ND	1.06 J	—	—	—	—
Bismuth 214	pCi/g	ND	ND	1.35	—	—	—	—

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		Maximum Concentration			Protection of Surface Water	Protection of Groundwater	Protection of Human Health	
		0-1 feet bgs	1-15 feet bgs	15+ feet bgs			Unrestricted Use	Industrial Use
Europium 155	pCi/g	ND	0.123 J	ND	—	—	—	—
Potassium 40	pCi/g	ND	ND	20.4	—	—	—	—
Sodium 22	pCi/g	ND	0.042 J	ND	—	—	—	—
Lead 210	pCi/g	ND	ND	1.4 J	—	—	—	—
Lead 212	pCi/g	ND	ND	1.9	—	—	—	—
Lead 214	pCi/g	0.85	ND	1.58	—	—	—	—
Radium 226	pCi/g	ND	ND	1.47	1.6E+02	5.0E+02	1.1E+00	1.1E+00
Thorium 232	pCi/g	1.77 J ^f	ND	ND	4.8E+02	1.5E+03	1.6E+00	1.6E+00
Protactinium 234	pCi/g	8.8 J	ND	ND	—	—	—	—
SVOCs								
Acenaphthene	mg/kg	ND	0.341 J	ND	6.4E+02	1.6E+04	2.9E+02	1.6E+04
Anthracene	mg/kg	ND	1.1 J	ND	3.1E+05	1.0E+05	2.3E+03	1.0E+05
Benzo(a)anthracene	mg/kg	ND	1.63	ND	1.4E-01	1.63E+00	8.8E-02	8.8E-01
Benzo(a)pyrene	mg/kg	ND	0.921 J	ND	1.4E-01	1.2E+00	1.1E-02	8.8E-02
Bis(2-ethylhexyl)phthalate	mg/kg	0.605 J	0.041 J	0.031 J	5.8E+01	9.6E+01	1.2E+01	9.6E+01
Chrysene	mg/kg	ND	1.61	0.55	1.4E-01	8.7E+00	8.8E-01	8.7E+00
Dibenzo(a,h)anthracene	mg/kg	ND	0.366 J	ND	1.4E-01	4.3E-01	2.1E-02	1.4E-01
Dibenzofuran	mg/kg	ND	0.397 J	ND	—	—	1.1E+01	8.4E+02
Fluoranthene	mg/kg	ND	3.9	ND	9.6E+03	1.5E+04	4.9E+02	1.5E+04
Fluorene	mg/kg	ND	0.712 J	ND	4.2E+04	1.3E+04	2.4E+02	1.3E+04
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.587 J	ND	1.4E-01	8.8E-01	1.2E-01	8.8E-01

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Analyte	Units	AFRPA Screening Levels ^a						
		Maximum Concentration			Protection of Surface Water	Protection of Groundwater	Protection of Human Health	
		0-1 feet bgs	1-15 feet bgs	15+ feet bgs			Unrestricted Use	Industrial Use
Naphthalene	mg/kg	ND	0.307 J	ND	6.7E+02	3.9E+01	4.6E-02	6.0E-01
Phenanthrene	mg/kg	ND	3.43	ND	—	1.1E+04	2.6E+02	1.1E+04
Pyrene	mg/kg	ND	2.7	ND	3.1E+04	1.1E+04	3.5E+02	1.1E+04
Pesticides/Herbicides								
4-(2,4-dichlorophenoxy) butyric acid	mg/kg	ND	ND	0.009 J	—	—	2.3E+01	3.8E+02
Sylvex	mg/kg	ND	0.0003 J	ND	—	—	3.2E+01	3.8E+03
TPH								
TPH-D	mg/kg	380	ND	12 J	1.0E+02	1.0E+02	—	—
TPH-G	mg/kg	3.32 J	2.45 J	ND	1.0E+01	1.0E+01	—	—
VOCs in Soil Gas^a								
Acetone	ppbv	NA	43	200	—	—	130,000	1,900,000
Benzene	ppbv	NA	6.7	6.7 J	—	—	9.9	170
Bromomethane	ppbv	NA	3.6	ND	—	—	13	1,900
Chloroform	ppbv	NA	1.3 J	ND	—	—	2.2	36
Chloromethane	ppbv	NA	1.4 J	ND	—	—	65	1,100
Ethylbenzene	ppbv	NA	1.1 J	ND	—	—	23,000	330,000
1,2-Dichlorobenzene	ppbv	NA	6.4	ND	—	—	3,300	48,000
Freon® 11	ppbv	NA	9.2	ND	—	—	2,800,000	18,000,000
Freon® 12	ppbv	NA	1.1 J	1.8 J	—	—	1,300,000	8,000,000
Freon® 113	ppbv	NA	1.3 J	16	—	—	390,000	5,600,000

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Analyte	Units	AFRPA Screening Levels ^a						
		Maximum Concentration			Protection of Surface Water	Protection of Groundwater	Protection of Human Health	
		0-1 feet bgs	1-15 feet bgs	15+ feet bgs			Unrestricted Use	Industrial Use
n-Heptane	ppbv	NA	5.8 J	ND	—	—	17,000	250,000
n-Hexane	ppbv	NA	6.7 J	3,300 J	—	—	20,000	290,000
Methylene chloride	ppbv	NA	ND	2.2 J	—	—	150	2,500
Methyl ethyl ketone	ppbv	NA	12	39	—	—	170,000	2,400,000
Methyl tert-butyl ether	ppbv	NA	8.8	ND	—	—	260	4,400
Tetrachloroethene	ppbv	NA	ND	3.6	—	—	5.8	98
Toluene	ppbv	NA	8.5	15 J	—	—	130,000	1,900,000
Trichloroethene	ppbv	NA	ND	2,400	—	—	23	380
1,2,4-Trimethylbenzene	ppbv	NA	2.9 J	1.4 J	—	—	120	1,800
1,3,5-Trimethylbenzene	ppbv	NA	0.84 J	ND	—	—	120	1,800
m,p-Xylenes	ppbv	NA	4.3 J	ND	—	—	2,300	33,000
o-Xylenes	ppbv	NA	1.5 J	ND	—	—	2,300	33,000

^a See Appendix B of the IP #3 FS (CH2M HILL, 2008) for calculation of screening levels. Protection of surface water levels applicable only to samples collected from 0 to 1 foot bgs. Protection of human health levels are applicable only to samples collected from 0 to 15 feet bgs.

^b Metal concentrations measured with Method SW6010, unless otherwise noted.

^c Metals listed exceed "combined" background levels defined in the General Framework document (Radian, 1997).

^d Concentration measured using Method SW7131.

^e Concentration measured using Method SW7841.

^f Although the concentration of thorium 232 exceeds screening levels, it is considered to be within the range of background.

^g All soil gas concentrations measured using Method TO-14.

Notes:

BOLD indicates compound in excess of screening levels.

J = Analyte was detected but quantification is an estimate

NA = Not analyzed

ND = Not detected

TABLE 2

Summary of Site Risks

Area of Concern G-1 Record of Decision, Former McClellan Air Force Base, Sacramento, California

	Residential (0 to 2 feet bgs) ^a Adult (Child)	Residential (2 to 10 feet bgs) Adult (Child)	Industrial/ Occupational Outdoor	Indoor Air Residential	Indoor Air Industrial/ Occupational
Cancer Risk ^b	0.05 (0.05)	30 (30)	0.006	1	0.08
Hazard Index	0.02 (0.9)	0.04 (2)	0.04	0.2	0.02

^a Residential risks also conservatively represent the risks for recreational use.^b Cancer risk is the probability out of 1,000,000.










TABLE 3

Applicable or Relevant and Appropriate Requirements

Area of Concern G-1 Record of Decision, Former McClellan Air Force Base, Sacramento, California

Action	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment
Land Use Covenant	CA Civil Code Section 1471(a)	Relevant and Appropriate	Allows the State (as non-owners) to enter into restrictive land use covenants with land owners and their successors after determining that protection of present or future human health or safety or the environment is necessary. The covenants will run with the land if the affected land is described in the instrument of the covenant, the successive owners are expressly bound in the instrument of the covenant, each act in the covenant relates to use of the land and is reasonably necessary to protect present or future human health or safety or the environment, and the covenant is recorded with the county.	Permits the State to enter into an agreement to restrict land use with the property owner to protect human health or the environment, and invalidates common-law impediments to the restriction running with the land.
Land Use Covenant	22 CCR, Section 67391.1(a)	Relevant and Appropriate	Requires imposition of appropriate limitations on land use by recorded land use covenant when hazardous substances remain on the property at levels that are not suitable for unrestricted use of the land.	
Land Use Covenant	22 CCR, Section 67391.1(b)	Relevant and Appropriate	Requires that the cleanup decision document contain an implementation and enforcement plan for land use limitations.	This requirement implements Section 67391.1(a).
Land Use Covenant	22 CCR, Section 67391.1(d)	Relevant and Appropriate	Requires that the land use covenant be recorded in the county where the land is located.	This requirement implements Section 67391.1(a).
Land Use Covenant	22 CCR, Section 67391.1(e)	Relevant and Appropriate	Requires imposition of appropriate limitations on land use by recorded land use covenant when hazardous substances remain at levels that are not suitable for unrestricted use of the land on a property owned by the federal government that will be transferred to nonfederal entities.	

Figures

National Contingency Plan Criteria	Alternative 1 No Action	Alternative VOC2/ Alternative Non-VOC2 Institutional Controls to Prohibit Residential Use	Alternative Non-VOC4b Excavation and Offsite Disposal
1 Overall Protectiveness of Human Health and the Environment Determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment. 	No	Yes	Yes
2 Compliance with State and Federal Environmental Requirements Evaluates alternatives for compliance with environmental protection requirements. 	No	Yes	Yes
3 Long-term Effectiveness Considers an alternative's ability to maintain reliable protection of human health and the environment after implementation. 	No	Yes	Yes
4 Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment Evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present. 	No	No	No
5 Cost Weighs the benefits of a particular alternative against the cost of implementation. 	\$0	\$81,000*	\$4,352,000
6 Short-term Effectiveness Addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until cleanup goals are achieved. 	No	Yes	Yes
7 Implementability Refers to the technical and administrative feasibility of the alternative, including the availability of materials and services needed to implement a particular option. 	No	Yes	Yes
8 State Acceptance Considers whether the state favors or objects to any of the alternatives based on the available information. 	No	Yes	Yes
9 Community Acceptance Indicates whether community concerns are addressed by the alternative and whether the community has a preference for an alternative. Although public comment is an important part of the final decision, the Air Force must balance community concerns with all the previously mentioned criteria. 	No	Yes	Yes

*The cost for Institutional Controls is based on a 30-year timeframe.

FIGURE 2
NATIONAL CONTINGENCY PLAN CRITERIA FOR
EVALUATING REMEDIAL ALTERNATIVES AND HOW
THE ALTERNATIVES FOR AOC G-1 MEET THE CRITERIA
AOC G-1 RECORD OF DECISION
FORMER McCLELLAN AIR FORCE BASE
SACRAMENTO, CALIFORNIA

Appendix
Administrative Record Index

APPENDIX

Administrative Record Index

Document Date	Subject or Title	Author / Corporate Affiliation	File Name
1/24/1995	Preliminary Assessment Report Operable Units E through H Part 1: Summary and Overview	Louie, Stacy A. Sparks, George C.	MCCLN_AR_5485.PDF
4/1/1997	Final FSP, OU-E, OU-F, OU-G, OU-H	Radian Corp.	MCCLN_AR_3313.1.PDF
4/1/1997	Final FSP, OU-E, OU-F, OU-G, OU-H	Radian Corp.	MCCLN_AR_3313.2.PDF
11/1/1997	Final Radiation Summary Report	Radian Corp.	MCCLN_AR_3476.PDF
10/1/1998	Final Site Characterization, FSP, Vol I of IV, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_899.1.PDF
10/1/1998	Final Site Characterization, FSP, Vol I of IV, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_899.2.PDF
10/1/1998	Final Site Characterization Summary, FSP, Vol II of IV, Appendix A, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_900.1.PDF
10/1/1998	Final Site Characterization Summary, FSP, Vol II of IV, Appendix A, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_900.2.PDF
10/1/1998	Final Site Characterization Summary, FSP, Vol III of IV, Appendix B, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_901.PDF
10/1/1998	Final Site Characterization Summary, FSP, Vol IV of IV, Appendix C, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_902.PDF
4/1/1999	RI, Final Audit Report, OU-E, OU-F, OU-G, OU-H	URS Greiner Woodward Clyde, Inc.	MCCLN_AR_947.PDF
6/1/2000	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol I of VIII, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_3837.PDF
6/1/2000	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol II of VIII, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_3838.PDF
6/1/2000	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol III of VIII, Appendix A, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_3839.1.PDF
6/1/2000	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol III of VIII, Appendix A, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_3839.2.PDF
6/1/2000	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol IV of VIII, Appendix A, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_3840.1.PDF

Document Date	Subject or Title	Author / Corporate Affiliation	File Name
6/1/2000	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol IV of VIII, Appendix A, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_3840.2.PDF
6/1/2000	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol V of VIII, Appendix B, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_3841.1.PDF
6/1/2000	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol V of VIII, Appendix B, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_3841.2.PDF
6/1/2000	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol VI of VIII, Appendix C1, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_3842.PDF
6/1/2000	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol VII of VIII, Appendix C1, C2-8, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_3843.1.PDF
6/1/2000	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol VII of VIII, Appendix C1, C2-8, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_3843.2.PDF
6/1/2000	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol VIII of VIII, Appendix D, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	MCCLN_AR_3844.PDF
7/1/2000	Final Supplemental Environmental Baseline Survey (EBS), Group 4	Radian Corp.	MCCLN_AR_3866.PDF
8/30/2000	Supplemental FOSL, Group 4 Facilities	Lowas, Albert F, Jr.	MCCLN_AR_4328.PDF
8/31/2005	Soil Vapor Extraction Removal Action Quarterly Vadose Zone Monitoring Report April – June 2005	URS	MCCLN_AR_6119.PDF
12/11/2008	Final Initial Parcel #3 Feasibility Study, Former McClellan Air Force Base, California	CH2M HILL	pending
5/28/2009	Final AOC G-1 Proposed Plan, Former McClellan Air Force Base, California	AFRPA	pending
6/16/2009	Public Meeting, Proposed Plan for Area of Concern G-1, Former McClellan Air Force Base, California	AFRPA	pending